DISTRIBUTED ENERGY RESOURCES

Weekly Summary of Events | **www.eren.doe.gov/** | **January 5, 2001**

What's News With DER? **Vol. 2 NO. 1**

DOE News

On December 14th, a kickoff meeting was held with **Salt River Project** (SRP) in Phoenix, Arizona. Attendance included D. Tom Rizy, Oak Ridge National Laboratory (ORNL) technical manager; Barry Cummings, a 35-year veteran of SRP and SRP project manager; other members of the SRP project team; Phil Sarikas of Intel, and Tom Huang of Sematech. The purpose of the meeting was to initiate the project, introduce the project team to the ORNL technical manager, discuss the project plan and schedule, and discuss reporting, deliverables, and the next step in the project, which will be to visit an Intel semiconductor wafer fabrication plant in Phoenix some time in January or February. SRP and its partners are investigating multipurpose dispersed generation (DG) for both power providers and the semiconductor industry. Together, SRP; Intel, a major producer of semiconductor wafers; and Sematech, a nonprofit organization representing the semiconductor industry, will be focusing on 10 to 50 MW semiconductor fabrication plants. They will be evaluating economic, reliability, availability, environmental, and various regulatory and siting issues for DG technologies at semiconductor fabrication plants.

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Tina Kaarsberg gave a presentation on the Analysis Collaborative's Government Performance and Results Act (GPRA) forecast for DER on January 4.

Regional Office News

Representing both the **Denver Regional Office** and the **Electricity Restructuring Program**, Cathy Ghandehari attended the December 20, 2000, meeting of Energy Secretary Richardson with Western governor's to discuss California/Northwest electricity shortages. As follow-on to the meeting, Cathy and Chuck Goldman of Lawrence Berkeley National Laboratory are providing expert technical assistance to the Western Governor's Association's (WGA) effort to compile a report for a Jan. 28 WGA Energy Roundtable that will list and evaluate energy efficiency measures that can help electricity shortages in the near-, mid-, and long-term.

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On January 3, the **Mohegan Tribe of Connecticut** gave presentations at the offices of U.S. EPA to representatives of the U.S. EPA and Boston regional Office members Hugh Saussy, Albert Benson and Daniel Strout. Presentations were given by a member of the Tribal Council, a tribal member, the Manager of Construction, and the Director of Environment. The areas covered were the holistic approach utilized to minimize energy consumption on tribal lands and the corollary approach used to maximize recycling of solid waste. The Mohegan Tribal Council recently authorized the purchase of two fuel cells. The overall efficiency of the installation is estimated to be in the area of 90-95 percent; both low and high temperature hot water and total electricity output will be utilized. Electrical production from the fuel cells will be directed toward critical and safety related loads. Other forward energy concepts being explored include, but are not limited to: using photovoltaic power systems to provide power to ground source heat pumps coupled with high efficiency pumps and variable speed drives, integrating air handling equipment with high efficient pumps and variable speed drives, and combining UPSes with photovoltaic energy supplies to meet critical loads.

Industry News

AstroPower, Inc., announced on December 12 that it signed a Technical Cooperation Agreement with **Elkem,** the world's largest producer of silicon metal. The agreement involves the final development of a low-cost process for manufacturing solar-grade silicon – the raw material used to make solar cells. The agreement also calls for the future establishment of a jointly-owned manufacturing venture, based in Norway and managed by Elkem, that will supply low-cost silicon feedstock to the global solar power industry.

Feature of the Week

EPA Center to Verify Performance of Capstone MicroTurbine™ CHP System
Greenhouse Gas Reductions as High as 50% May be Possible

The **U.S. Environmental Protection Agency (EPA)**'s **Environmental Technology Verification Program (ETV)** - in conjunction with Natural Resources Canada - has recently announced plans to verify the performance of a new **Capstone MicroTurbine™ combined heat and power (CHP) system** located in downtown Calgary, Alberta, Canada. The system, which was designed and installed by **Mariah Energy Corporation**, is located at a 12-unit commercial live/work facility called **Walker Court**. The microturbine will generate most of the electricity and all of the hot water required by Walker Court. The unit will also supply space heating for much of the year; during the coldest winter months a back-up gas-fired boiler will be used to supply up to 20% of the space heating required. The Walker Court facility also contains a turbine exhaust heat recovery unit and an integrated building energy management system. The system provides on-site backup power with fully automated transfer to stand-alone operation in case of grid failure.

In addition to the building's innovative energy management system, Walker Court features residential living above commercial bays, complete with full basements. A concrete shell and slab floor heating system provide a quiet and energy efficient space for living and work. Mariah's contract with tenants will include delivery of heat and power, and Mariah will retain all responsibility for operation and maintenance of the building's energy systems. Unit owners simply receive monthly statements indicating the amount of heat and electricity consumed (as they do presently from conventional utilities), as well as an estimate of emissions displaced in the previous month. According to Paul Liddy, Mariah Energy President, "Mariah's commitment is to maintain prices for both heat and power lower than those experienced by residents in traditional condominiums."

"I'm really excited about this," says Stephen Piccot, Director of **ETV's Greenhouse Gas Technology Verification Center**. "This is one of the most appropriate uses of microturbine technology, and is the kind of technology innovation the Center was established to verify. We can only estimate at this point, but Mariah's unit may have a potential energy conversion efficiency of 70 to 80 percent, and with that, the technology could simultaneously reduce greenhouse gases by 50 percent and still provide building tenants with high quality energy at a competitive price. That's a big gain with little pain, and it's possible that emissions of some conventional air pollutants will be reduced to an even greater extent."

The GHG Center is currently developing a Verification Test Plan, and will be performing measurements at the site in Calgary in early 2001. The Center plans to verify the **power quality**, **energy efficiency**, **air emissions**, and **GHG emissions reduced** at Walker Court. Using verification protocols developed by the Center, and measurements collected at Walker Court, GHG reductions for other potential locations in the U.S. and Canada will also be estimated. This verification will be conducted in collaboration with several Canadian governmental agencies. Says Paul Liddy, "We have just established an agreement with Capstone to deliver 126 microturbine units over the next two years. We are already experiencing a strong interest in our system, and are augmenting our fabrication capabilities to meet what may be a sharp and growing increase in new installations and retrofits over the next 5 years." The GHG Center is also evaluating other microturbine technologies and is in the process of forming a Stakeholder Technical Panel to focus specifically on distributed generation (DG) technologies, including the Mariah CHP verification. The role of the panel would be to actively assist the Center in planning verification tests, reviewing Verification Test Plans and Repors, identifying good verification candidates for future tests, and disseminating the performance results widely.

Source: Greenhouse Gas Technology Verification News, Issue 5, December 2000 http://www.epa.gov/etv

The solar power industry has relied on the semiconductor industry silicon by-product for the production of solar cells. In the past the limited availability and high price of solar-grade silicon feedstock have constrained solar industry growth. The alliance between the two companies will remove a fundamental barrier to widespread adoption of solar electric power by developing a dedicated source of low-cost solar-grade silicon feedstock for the solar industry.

CALENDAR OF EVENTS

Date	Event	Location	Other Information
JANUARY 2001			
10-12	2nd Annual Touchstone Energy New & Emerging Technologies Conference	Tucson, AZ	www.nreca.org/edu_events/conferences/newtech/html/2001/2001.html
11	Development of Renewable Energy Strategy through Clean Air Act Legislation	Washington, DC	www.nrel.gov/events.html
16-19	DOE Distributed Power Program Review Meeting	Washington, DC	www.eren.doe.gov/distributedpower
23-25	Pricing Strategies for Distribution Companies	Orlando, FL	(818) 888-4444; www.informationforecast.com
24-25	Distributed Generation Conference	Denver, CO	www.euci.com; 303-770-8800
29-30	Harvesting Clean Energy for Rural Development: New Economic Opportunities in Wind, Biomass, Solar and Geothermal Power	Spokane, WA	Curtis Framel DOE/Seattle 206-553-7841
28-31	Air Conditioning, Heating and Refrigeration Exposition	Atlanta, GA	www.agcc.org
FEBRUARY 2001			
8-9	Congestion Management Conference	Denver, CO	www.euci.com; 303-770-8800
8	Representation of Renewable Energy in Models	Washington, DC	www.nrel.gov/events.html
20-22	Micro Power Capitalizing on Distributed Energy Resource Strategies for Competitive and Reliable Power	San Francisco, CA	Bob Dixon is giving a talk entitled, “Distributed Energy Resources: What’s New at the U.S. Department of Energy.”
19-22	4th Industrial Energy Efficiency Syposium	Washington, DC	Sponsored by OIT; OPT will have a booth there; www.oitexpo4.com
22	Steel-Utility Workshop	Washington, DC	Peter Solmon-Cox; 202-586-2380
MARCH 2001			
8	Renewable Energy and Real Options Analysis	Washington, DC	www.nrel.gov/events.html
20-24	Distributed Generation Conference	San Diego, CA	www.powerin.org
21-23	5th annual Distributed Generation and On-site Power Conference	New Orleans, LA	Pat Hoffman to give keynote address; www.dist-gen.com
APRIL 2001			
2-3	Business Communications Company’s 1st Fuel Cell Conference	San Antonio, TX	EERE representative to speak; www.buscom.com
23-25	Intertech's Fifth International Conference on Distributed Power	Washington, D.C.	Hugh Olmstead; olmstead@intertechusa.com; 207-281-9606

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Date	Event	Location	Other Information
MAY 2001			
1-3	Industrial Energy Technology Conference	Houston, TX	jim@esl.tamu.edu
9-10	Energy Management Conference	San Diego, CA	Sponsored by FEMP; www.aeecenter.org
AUGUST 2001			
29-Sep 3	IEEC Integrated Energy Efficiency Congress	Cleveland, OH	Sponsored in part by FEMP; www.aeecenter.org
OCTOBER 2001			
24-26	World Energy Engineering Congress	Atlanta, GA	www.agcc.org